U.S. Department of Agriculture Guidance on Renewable Energy

INTRODUCTION

The purpose of this guidance is to provide USDA agencies with direction for complying with Section 203 of the Energy Policy Act of 2005 (EPAct2005) and Section 8(2) of USDA's Facility Energy Regulation (DR-5500-001). This document provides an overview of renewable energy, discusses strategies for purchasing green power and renewable energy certificates, and establishes requirements for USDA agencies to report their progress in complying with EPAct2005. The appendix to this guidance discusses tools for purchasing green power and provides copies of renewable energy laws, regulations and policy for reference.

WHAT IS RENEWABLE ENERGY?

Renewable energy or green power can be defined as energy from sources that are continuously replenished or rapidly renewable and whose generation has negligible environmental impacts. Such sources of energy include:

- **Wind, Wave, Tidal, and Small Scale Hydropower**
  Wind power and hydropower use mechanical energy to generate electricity. The movement of air or water turns the blades of a turbine, and the motion of the blades generates electricity.

- **Biomass**
  Biomass power uses a variety of technologies, including a direct-fired system, where burning the biomass heats water and generates steam that turns a turbine, and co-firing, in which biomass replaces some of the coal in a coal plant.

- **Landfill Gas**
  Landfill gas is extracted from landfills using a series of wells and a blower/flare (or vacuum) system. This system directs the collected gas to a central point where it can be processed and treated, depending upon the ultimate use for the gas. From this point, the gas can be flared or used to generate electricity, replace fossil fuels in industrial and manufacturing operations, fuel greenhouse operations, or be upgraded to pipeline quality gas.

- **Geothermal**
  Geothermal power captures heat energy from underground sources to generate electricity.

- **Solar**
  Solar power uses specially constructed panels to absorb the sun's energy and convert it into electrical current.

TYPES OF PRODUCTS

The following three product types are considered green power: green power electricity products, renewable energy certificates, and on-site generation.

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- **Green power electricity products** are partially or entirely generated from renewable energy resources. When available, electricity suppliers offer electricity from renewable resources either as a percentage of electricity usage or in a fixed number of units or blocks (usually 100 kilowatt-hours). Either way, this usually results in the purchase of a blend of renewable and conventional power. About 50 percent of retail customers in the United States now have the option to buy green power directly from electricity suppliers serving their area.

- **Renewable energy certificates** (also known as RECs, green tags, green energy certificates, or tradable renewable certificates) represent the technology and environmental attributes of one megawatt hour of electricity generated from renewable sources. These attributes may be sold separately from the associated electricity. If the attributes are separated from the associated electricity, the electricity is no longer considered "green."

  Because RECs are sold separately from electricity, they can be purchased from locations anywhere, enabling agencies to choose green power even if their local utility or power marketer does not offer a green power product. Customers do not need to switch from their current electricity supplier to purchase certificates, and they can buy RECs based on any fixed amount of electricity.

- **On-site renewable generation** projects generate electricity at a facility using renewable energy resources. On-site renewable generation can increase power reliability, provide stable electricity costs, and help manage waste streams. Furthermore, in many states, when on-site renewables generate more power than is needed on site, the excess power can be returned to the electric grid for credit from the local electric utility. This process is known as net-metering.

  On-site renewable generation is a subset of distributed energy generation; for more information, see the Department of Energy's Distributed Energy Web site at www.eere.energy.gov/de. Another excellent source of information is the Department of Energy's Guide to Purchasing Green Power; Chapter 7 describes the steps to establish an on-site renewable energy system:

  - screening the technologies best suited to site;
  - obtaining technical and financial assistance;
  - creating a project plan;
  - anticipating possible barriers;
  - installing and operating the system.

To find out which green power products are available in your area, visit the Green Power Locator. The Green Power Locator identifies suppliers of green power by state, including green pricing, green marketing, and renewable energy certificate products.

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WHY USE RENEWABLE ENERGY?

Through purchases, onsite renewable energy systems, and outreach efforts, USDA supports the development of the green power market, which is a critical component in the long-term strategy to protect our environment and enhance our nation's energy security. Fostering renewable energy production and developing better renewable technologies benefits the environment, expands the diversity of our energy supply, and improves the reliability of our power supply systems.

In addition to being federally mandated, there are numerous environmental, energy and economical reasons for using and generating renewable energy.

Energy Policy Act of 2005

The Energy Policy Act of 2005 (EPAct 2005) requires federal agencies to consume renewable energy in amounts no less than:

- 3 percent of the total annual electricity consumption in FY 2007 through FY 2009
- 5 percent of the total annual electricity consumption in FY 2010 through FY 2012
- 7.5 percent of the total annual electricity consumption in FY 2013 and thereafter.

Executive Order 13123: *Greening the Government through Efficient Energy Management*

Executive Order 13123 expands the use of renewable energy at federal facilities, striving to have 20,000 solar energy units installed by 2010.

USDA Departmental Regulation on Facilities Energy and Water Conservation and Utilities Management (USDA DR-5500-001)

This regulation establishes the Department of Agriculture policy for renewable energy in USDA facilities in accordance with the requirements of legislation and executive orders, and assigns responsibilities for implementation of this policy.

Environmental Stewardship

Concerns exist about the environmental impacts associated with traditional electricity generation fuel sources.

- Carbon dioxide (CO_2) is a product of fossil fuel combustion. Burning fossil fuels releases carbon that has been stored underground for millions of years into the atmosphere. The carbon in these fossil fuels is transformed into carbon dioxide—the predominant gas contributing to the greenhouse effect—during the combustion process and contributes to the potential for global warming.

- Methane (CH_4) is a greenhouse gas that remains in the atmosphere for approximately 9-15 years. Although carbon dioxide is more prevalent in the atmosphere (there is approximately 200 times more carbon dioxide than methane in the atmosphere), methane is more than 20 times more effective in trapping heat than carbon dioxide over a 100-year period. Sources of methane include organic waste decomposition in municipal solid waste landfills and agricultural production. Methane is also emitted during the production and transport of coal, natural gas, and oil.

- The burning of fossil fuels emits many other pollutants that negatively impact the environment, among them sulfur dioxide, nitrogen oxides, particulate matter, and mercury.

Energy Security

Heightened interest in energy security and energy independence has led to an increased focus on renewable energy resources. Purchasing green power can help reduce America's dependence on foreign fuel sources because green power is a domestic energy source, whereas conventional power is in part produced from imported fossil fuels, such as petroleum or natural gas. Also, renewable fuels are inexhaustible and can be used so that fossil fuels are kept in reserves for times of need.

Economics: The Business Case

Green power provides a hedge against risks posed by electricity price instability. Wind, geothermal, hydro, and solar energy are not subject to the rise and fall of fuel costs and therefore they can offer a fixed price over the long term. Buying green power supports the U.S. share of the growing renewable market, with the potential for billions of dollars to be invested in the U.S. economy and enlarge the job market.

PURCHASING RENEWABLE ENERGY

Regardless of the type of green power product you buy, the following steps are recommended to help agencies make a green power purchase.

- **Identify key decision makers within your agency.** The more participation you have up front, the easier the purchase will be.

- **Gather energy data.** Start by figuring out the annual electricity consumption for your agency's facilities. Large agencies usually have one person who collects all electrical bills. Some agencies hire companies to track their total electricity consumption.

    - The Green Power Partnership offers agencies a minimum purchasing benchmark as well as a benchmark for outstanding purchases that qualify Partners for the Green Power Leadership Club.

  - You can enter your electricity usage into the Power Profiler, to determine the current environmental impact of your electricity use.
  - Another way to reduce the environmental impact of electricity is to use electricity more efficiently. Reducing your total electricity consumption will save you money, and it will reduce any additional costs you might incur when buying green power. ENERGY STAR offers lots of ideas about how to save energy.

- **Outline key objectives.** In trying to find the "right" green power product, it is helpful to know your agency's objectives for the purchase.

- **Research product options.** Review the types of products and the common product considerations to determine which product will best meet your key objectives.

  - The Green Power Locator can give you a list of suppliers and products available in your state.

- **Determine scope of purchase.** Decide on the appropriate green power purchasing scope for your green power purchase. Scope refers to the agency entity for which you will purchase green power (e.g., all facilities owned or operated by an agency, only facilities in one utility territory or region, or one particular facility). Especially for large agencies with multiple sites, choosing the scope of their green power purchase can be an important task.

- **Choose the right green power product for your agency!**

  - Agencies that are ready to make a green power commitment can join EPA's Green Power Partnership, which can help lower the costs and increase the value of their green power purchase. Agencies that are ready to commit to buying green power can join the Green Power Partnership to receive technical assistance and recognition for green power purchasing.

Product Considerations

The following are important elements of a green power product and should be considered when selecting a green power product. Understanding these elements will enable your agency to find a product best suited to meet your requirements.

- **Price** – Green power prices are most often quoted as a premium — additional to the standard electricity rate. The actual price of the product will usually include the standard electricity rate, plus the premium, unless you are buying a renewable energy certificate. A growing number of green power providers are offering a fixed-price product without a variable fuel charge. Check with suppliers to see if they are offering these types of products, which can provide a hedge against volatile fuel prices.

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- **Type and amount of eligible renewable resources** – The amount and type of renewable resources in a green power product can vary. For example, a product may contain 100% eligible renewables, or it may combine renewables with conventional electricity sources. Also, products may be generated from one renewable resource or a mix of renewable resources. The type and amount of renewable resources will affect a product's pricing, environmental impact, and value to the purchaser. You should ask suppliers about the type and amount of renewable resources in their green power products. If possible, compare the amount of renewable resources in the green power product with the amount of renewable resources used in your area's standard electricity service.

- **Amount of "new" renewable resources** – "New" renewable resources refer to renewable facilities that have been developed to specifically serve the green power market. While the electricity and attributes from renewable facilities that were in place prior to the advent of the green power market are still sold today in many green power products, it is the support of "new" renewable resources that provides the additional environmental benefits. Generally, a "new" renewable resource will have been installed and turned on after January 1, 1997.

  In some cases, purchasing from older renewable resource facilities can provide support for a facility that might be shut down and prevent their displacement by non-renewable facilities. In cases where demand for green power exceeds supply, purchasing from existing renewable resource facilities can eventually lead to the installation of new renewable resource facilities.

- **Product certification** – Green power products that are certified by an independent third party offer a higher level of certainty to customers that they are getting what they pay for. Certified products meet environmental and customer protection guidelines adopted by the certifying agency as well as guidelines set forth by the National Association of Attorneys General and the Federal Trade Commission.

- **Location of the renewable resource** – Knowing the location of the renewable resources used to generate a green power product is important to customers interested in supporting the development of renewable resources in their region.

- **Length of green power contract** – Contract length for green power products is commonly one to three years. Some suppliers will offer discounts to large customers that can sign multi-year contracts. Signing a long-term contract helps renewable energy project developers finance new renewable resource projects.

- **Marketing assistance coupled with green power** – Green power providers frequently provide agencies with marketing assistance in conjunction with a green power product. The marketing assistance is usually provided to help agencies explain to their stakeholders that "we are buying green power". The level of marketing assistance that providers offer customers varies significantly and can affect green power product prices.

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Financial Considerations

Cost is usually the primary concern with green power. Several strategies, described below, are available to help minimize the extra cost of green power. The following section is based on material from the U.S. Department of Energy's Guide to Purchasing Green Power.

- **Purchase green power for a portion of your use.** You do not have to purchase green power for all your energy needs. Purchasing 5% green power may add less than 2% to your overall electricity bill. Alternatively, some renewable electricity products are lower cost because they are already blended with conventional electricity. The Green Power Partnership offers agencies a minimum purchase benchmark that is based on electricity consumption.

- **Commit to a longer-term purchase.** Contract length should be considered in conjunction with the quantity and cost of power purchased. A short-term contract (typically less than three years) might provide you with greater flexibility in the future, but might also have a higher price per unit. On the other hand, a longer contract can reduce risk to the supplier, enabling them to offer a lower price. The right contract length will depend on your situation and the specific products that are available.

- **Seek a fixed-price contract.** Renewable energy sources have low operating costs. Because of these low costs, renewable energy is often available at a fixed price without fuel cost adjustments. Check with your supplier, particularly if you are considering a utility green pricing program, to see if green power customers are exempted from fuel cost adjustments.

- **Offset the cost with energy efficiency savings.** Reducing the total amount of electricity you purchase can help make green power more affordable. In your review of green power providers, you may find that some also offer energy efficiency services, with the goal of no net increase in power bills for their customers.

- **Use savings from competitive choice.** If you have competitive choices, either for green power or for commodity electricity, you might be able to save on energy costs and use the savings to purchase green power. Be aware that switching to less expensive conventional power can lead to greater environmental impact, so ask the electricity supplier for information on the emissions from their product and make sure those emissions do not cancel out the benefits of the green power you seek to purchase.

- **Specify a price cap or maximum total budget.** In your solicitation, you might be able to specify the maximum price per kilowatt hour or total cost, or simply place a cap on the renewable portion of the purchase. A drawback to this approach is that potential suppliers may be likely to bid at or near the price cap you specify. This approach can be an effective, however, if you are mainly

interested in non-price aspects of green power, such as environmental benefits or hedge value. Even if a price cap is not part of the solicitation, it is a good idea to determine the most you are willing to pay for green power as part of your internal planning.

- **Use incentives for buying green power.** A few states offer incentives that reduce the cost of green power. In almost all cases, these incentives are paid directly to the power marketer, so the incentive will already be factored into the price you are quoted, and you do not need to apply separately to receive these benefits. Power marketers and your state energy office will be able to provide information about green power purchasing incentives that are paid directly to the purchaser. For more information on available incentives, visit the Database of State Incentives for Renewable Energy

Even with the cost reduction techniques listed above, green power will often have a price premium compared to standard power. To justify this extra expense, it is important to consider the additional value that green power offers. When all the benefits are considered, many agencies decide that green power is an inexpensive way to help achieve various agency goals.

Choosing a Purchasing Scope

An appropriate scope of purchase should be selected when buying green power. Options include:

- **Facility-level purchase** – Buy green power for specific facilities, such as your agency's headquarters, or an aggregation of sites (e.g., sites in a particular utility territory, sites in one brand or product line, or sites in one state or geographic region).
- **Agency-wide purchase** – Buy green power for your entire operations.

Although the larger the purchase, the greater the environmental benefits to your purchase, there is no one right answer for which purchasing scope is the "right" amount.

Facility-level Purchase

For some agencies, it is important to start green power purchasing with a limited number of facilities. Purchasing green power at the facility level allows agencies to gain experience with green power products, suppliers, and benefits of green power purchasing. Often, agencies that make an initial purchase with a limited scope will expand their purchases to include additional facilities once they realize the benefits of green power.

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Agency-wide Purchase

Some agencies decide that it is important to switch all or part of their agency's electricity to green power. For agencies with multiple sites an agency-wide purchase entails a higher level of commitment than a facility level purchase.

An agency that makes an agency-wide purchase still needs to decide what percentage of green power to buy. An agency may decide to switch to green power for 10%, 50%, or even 100% of its electricity.

- For agencies interested in joining the Green Power Partnership, there is no minimum scope requirement to join the Partnership. Agencies may join the Green Power Partnership and commit to buy green power for their entire agency, or for a subset of the agency's facilities (sites, locations, areas, or regions).
- Agencies interested in offsetting the greenhouse gas emissions associate with their electricity use can use the Power Profiler.
- The Partnership offers Partners recommended minimum purchasing levels that vary according to the total electrical load of the participating entity.

Procurement Methods

The following section is based on material from the U.S. Department of Energy's Guide to Purchasing Green Power.

The appropriate procurement method will depend on the green power options available to you and your agency's procurement rules. Generally, the more load you can aggregate, the more attractive a customer you will be to a potential supplier.

The following points explain the typical ways to procure green power. Federal agencies will need to work within the unique procurement rules applicable to the federal government, which are explained further in the Guide to Purchasing Green Power.

- **Negotiate with your utility.** Procurement is simple if you are served by a utility in a regulated market where there is only one supplier. If your local utility offers a green power option, visit their Web site and then call to discuss your interest. Perhaps the only issue is the quantity you are going to buy, but you might be able to negotiate a slight price break if you are making a large purchase. If your utility doesn't offer a green power option and you are a large, highly visible customer, you might be able to encourage them to offer green power by promising to buy a large amount.

- **Contact sellers.** In competitive markets, you can keep the procurement process relatively simple by contacting the green power providers active in your area. You may find an off-the-shelf product that meets your needs. If you want something different, and there are only one or two green power suppliers in your area, call them to discuss your options. Let them know you would be interested in a

proposal. After discussion you may be ready to enter direct negotiation with one of them on product definition, certification, price and terms. Or they may be willing to tailor something to your agency's needs if you are planning a large enough purchase.

- **Issue a request for proposals.** Large companies and public institutions in particular often issue a formal solicitation or request for proposals (RFP). An RFP requires more time and effort to prepare, evaluate, and negotiate, but it may be more suitable for a large purchase and in situations where many green power options are available. With an RFP, it is important to understand your objectives and communicate them clearly in the solicitation.

  RFPs can be as simple as a letter sent to selected suppliers that describes your objectives and asks for a bid. This approach is appropriate if just a few suppliers are available. RFPs can also be more formal, casting a wider net through a broadly advertised solicitation. This formal approach requires more effort to prepare and more time to evaluate responses. USDA agencies will need to follow the USDA procurement rules and agency specific procedures as appropriate.

  You can also pursue a hybrid, two-step process in which you first issue a Request for Qualifications (RFQ), and then, from those responses, send a more detailed RFP to selected suppliers that meet your general qualifications. The RFQ would be broadcast to a larger audience, not only to find out who meets your qualifications, but also to gauge the amount of interest.

  For large quantity purchases, RFPs can also be addressed directly to renewable power generators (wholesale) as well as retail suppliers. Buying directly from generators may lower your cost but will probably require a longer term purchase commitment. The Green Power Partnership offers assistance to Partners in putting together a green-power purchase RFP; Federal Energy Management Program (FEMP) provides the same service for federal agencies. For renewable energy certificates (RECs), the World Resources Institute provides guidelines and a sample contract for an RFP

Special Considerations for Renewable Energy Certificates

Renewable energy certificates (RECs) can be purchased from REC marketers or sometimes directly from renewable energy generators. Several environmental brokers are also active in REC markets. Brokers offer another approach to procurement that is increasingly used by large purchasers. Brokers do not own the certificates but instead draw on their knowledge of the market to connect buyers and sellers for a small fee. They can help negotiate deals that take into account your unique interests.

Several issues need to be addressed in buying RECs. The attributes that the certificate represents should be clearly stated in a contract. If you plan to claim credit for these attributes, your contract should express in writing that the

purchaser receives title to them. If certain attributes (e.g., greenhouse gas emission reductions) have been sold separately to another party, then the exceptions should be clearly stated. It is also important to ensure that the attributes you buy have not been double-sold and claimed by another party. Certification can help ensure that the benefits promised by the supplier are actually achieved. Prices in voluntary markets are generally well below those in compliance markets.

You may want to buy certificates only from renewable energy generators or marketers that meet your specifications, so the same selection criteria mentioned in this section should still be considered in your procurement process. In fact, because certificates can come from any geographic area, the location where the certificate was generated, and therefore where the environmental benefits are likely to accrue, can be an important factor to consider.

BUDGET SUBMITTALS

In accordance with Executive Order 13123 and USDA DR-5500-001, agencies are required to include as part of their budget request each year a specific line item for implementing mandatory energy requirements.

REQUIREMENTS FOR REPORTING TO OPPM

In accordance with USDA DR-5500-001 Agency Energy Reports and Implementations Plans, which are due to OPPM no later than November 30 of each year, shall identify and discuss initiatives to purchase and generate electricity and thermal energy from renewable energy sources.

The OMB Energy Management Scorecard includes renewable energy goals as a scorecard metric. Updates to the scorecard are required semi-annually and therefore, in addition to reporting in December, USDA agencies may be required to provide an update in June of each year.

OUTREACH AND AWARENESS

Agencies are encouraged to identify relevant renewable energy initiatives and projects under their respective cognizance as nominees for the various annual energy-related awards programs, such as, Federal Energy Management Awards, Presidential Energy Management Leadership Awards, and Closing the Circle Awards.

Agencies are also encouraged to implement education and training programs that promote the use and awareness of renewable energy within their respective facilities.

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APPENDICES

A.1 Glossary of Renewable Energy Terms

Annual Consumption – Annual consumption refers to the amount of electricity used by a consumer in one year and is typically measured in kilowatt-hours (kWh). This information can be acquired from your electricity bill or by contacting your energy provider.

Carbon Dioxide – Burning fossil fuels releases carbon that has been stored underground for millions of years into the atmosphere. The carbon in these fossil fuels is transformed into carbon dioxide, the predominant gas contributing to the greenhouse effect, during the combustion process. While carbon dioxide is absorbed and released at nearly equal rates by natural processes on the Earth, this equilibrium may be disrupted when large amounts of carbon dioxide are released to the atmosphere by human activities, such as the burning of fossil fuels.

Commodity Electricity – Generic or null electricity that has been separated from the associated renewable energy certificates.

Conventional Power – Power that is produced from non-renewable fuels, such as coal, oil, natural gas, and nuclear material. These fuels are finite resources that cannot be replenished once they are extracted and used.

Distributed Generation – Small, modular, decentralized, grid-connected or off-grid energy systems located in or near the place where energy is used.

Electricity Supplier – As states restructure their electricity markets, an increasing number of customers will be able to choose from a range of energy suppliers who market different types of power products, including green power from renewable energy. Restructured local utilities offer electricity products generated exclusively from renewable resources or, more frequently, electricity produced from a combination of fossil and renewable resources. In states without restructured electricity markets, local utilities may offer green pricing programs that enable customers to elect to have their utility generate a portion of their power from renewable sources. To find out about green power products in your area, visit the Green Power Locator.

Energy Efficiency – Refers to products or systems using less energy to do the same or better job than conventional products or systems. Energy efficiency saves energy, saves money on utility bills, and helps protect the environment by reducing the amount of electricity that needs to be generated. When buying or replacing products or appliances, look for the ENERGY STAR® label — the national symbol for energy efficiency. For more information on ENERGY STAR® labeled products, visit the ENERGY STAR® Web site.

Energy Marketers – See *Electricity Supplier*.

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Fossil Fuels – Fossil fuels are the nation's principal source of electricity. The popularity of these fuels is largely due to their low costs. Fossil fuels come in three major forms—coal, oil, and natural gas. Because fossil fuels are a finite resource and cannot be replenished once they are extracted and burned, they are not considered renewable.

Generation – The act of transforming energy into electricity.

Greenhouse Gases (GHG) – Gases in the Earth's atmosphere that produce the greenhouse effect. Changes in the concentration of certain greenhouse gases, due to human activity such as fossil fuel burning, increase the risk of global climate change. Greenhouse gases include water vapor, carbon dioxide, methane, nitrous oxide, halogenated fluorocarbons, ozone, perfluorinated carbons, and hydrofluorocarbons.

Green Power (also see renewable energy) – Electricity that is generated from eligible renewable energy sources and is purchased voluntarily by consumers.

Green Power Product – Green power electricity products are supplied from renewable energy resources and include both green pricing and green marketing. These products are delivered through a utility or a competitive electricity supplier. Green power products always contain a higher percentage of renewable-based electricity than standard electrical service. Green power sold by regulated utilities is called green pricing, and when sold in competitive electric markets green power is called green marketing or retail green.

Green Power Purchasing – Green power can be purchased nationwide from several sources. Green power marketers offer green power products to consumers in deregulated markets—such as New Jersey, Pennsylvania, and New England. In states that do not allow retail competition in the electricity markets, many utilities offer renewable energy products through green pricing programs. In addition, all customers nationwide have the opportunity to buy renewable energy and stimulate the development of renewable generation sources through renewable energy certificates. Finally, customers can choose to install on-site renewable generation, such as solar panels.

Green Pricing – Green pricing refers to an optional utility service that enables customers of traditional utilities to support a greater level of utility investment in renewable energy by paying a premium on their electric bill to cover any above-market costs of acquiring renewable energy resources. To find out if your utility offers a green pricing program, refer to the Green Power Locator.

Kilowatt-hour – A kilowatt-hour (kWh) is a standard metric unit of measurement for electricity. The average home in the United States uses approximately 900 kWh/month or 10.8 MWh/year of electricity.

- One kilowatt-hour (kWh) is equal to 1,000 watt-hours (Wh).
- One megawatt-hour (MWh) is equal to 1,000 kilowatt-hours.
- A watt-hour is the amount of energy delivered at a rate of one watt (W) for a period of one hour.

- Example: A 100 watt light bulb in use for 10 hours uses 1000 watt-hours, or 1 kilowatt-hour of electricity (100 watts x 10 hours = 1000 watt-hours = 1 kWh).
- Analogy: The quantity of kilowatt-hours indicated on an electric meter is similar to amount of miles driven on an automobile as logged on a odometer; while the level of kilowatts are similar to the speed of an automobile as indicated on a speedometer.

Megawatt-hour – A megawatt-hour (MWh) is equal to 1,000 kWh.

Net Metering – A method of crediting customers for electricity that they generate on site in excess of their own electricity consumption. Customers with their own generation offset the electricity they would have purchased from their utility. If such customers generate more than they use in a billing period, their electric meter turns backwards to indicate their net excess generation. Depending on individual state or utility rules, the net excess generation may be credited to their account (in many cases at the retail price), carried over to a future billing period, or ignored.

"New" Renewables – "New" renewables refer to renewable facilities that have been developed to specifically serve the green power market. Generally, a "new" renewable resource will have been installed and turned on after January 1, 1997.

On-site Renewable Generation – Electricity generated by renewable resources using a system or device located at the site where the power is used. On-site generation is a form of distributed energy generation. For more information about distributed energy technologies that are renewable and non-renewable, visit the Department of Energy's Distributed Energy Resources Web site.

Renewable Energy (also see green power) - Electricity that is generated from eligible renewable energy sources and is purchased voluntarily by consumers.

Renewable Energy Resources – See What Are Renewable Energy Resources?

Renewable Energy Certificates – Also known as RECs, green tags, green energy certificates, or tradable renewable certificates, certificates represent the technology and environmental attributes of electricity generated from renewable sources. Renewable energy credits are usually sold in 1 megawatt-hour (MWh) units. A certificate can be sold separately from the mega-watt hour of generic electricity it is associated with. This flexibility enables customers to offset a percentage of their annual electricity use with certificates generated elsewhere.

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A.2 Tools for Purchasing Green Power

- "**The Guide to Purchasing Green Power**" The *Guide to Purchasing Green Power* is intended for agencies that are considering the merits of buying green power and for those that have decided to buy it and want help doing so. It provides an overview of green power markets and describes the necessary steps to buying green power. The guide was jointly developed and published by the U.S. Department of Energy, U.S. Environmental Protection Agency, World Resources Institute, and Center for Resource Solutions.

- **The Green Power Locator** provides a list of green power suppliers and products available in each state. The Green Power Locator can be found on U.S. Environmental Protection Agency's website at: http://www.epa.gov/greenpower/locator/index.htm.

- The Database of State Incentives for Renewable Energy (DSIRE) is a comprehensive source of information on the status of state programs and incentives promoting renewable energy, including information on financial incentives, net metering policies, and awareness and investment programs.